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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

| | Application No. | Applicant(s) |
| **Office Action Summary** | 10/535,555 | RAZZELL, CHARLES |
| | Examiner | Art Unit |
| | Charles Chow | 2618 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on <u>04 January 2008</u>.
2a)☒ This action is **FINAL**.          2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.
      4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-20</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
      Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
      Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
      a)☐ All   b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
      * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
      Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## Detailed Action

1. This office action is for the amendment received on 1/4/2008.

### Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. [ US 6,512,472 B1].

**For claim** 1, Smith et al. [ Smith ] teaches a method of operating a radio receiver [ Fig. 1 to Fig. 10 & its description in the specification ], having an analog portion coupled to an A/D converter [ circuitry before ADC 114, Fig. 1], and

the A/D converter coupled to a digital signal processing portion [ ADC 114 coupled to digital processing portion, direct down DDC 118 & demodulator 120 ], the method comprising

the obtaining a wideband signal power estimate of total signal power reaching the A/D converter by measuring a signal between the A/D converter and the digital signal processing portion [ the controller 116 measures signal power level of the samples from ADC 114, for the plural, wide, frequency bands, by adjusting the cutoff frequency of the filters 106/108 & controlling the gain of amplifier 112 in front of the ADC 114, to the desired level, to avoid the signal level clipping, col. 4, line 31 to col. 5, line 8 & abstract]; and

responsive to the wideband signal power estimate, preventing the total signal power

reaching the A/D converter from exceeding a maximum allowable input [ controller 116

selects the cutoff frequency of the filter 106/108, the gain of 112, to avoid signal level

clipping, col. 4, line 59 to col. 5, line 8; to prevent the ADC from clipping in step 636, col. 12

lines 35-61 ].

**For claim** 2, Smith teaches the method o f claim 1 above,

wherein preventing the total signal power reaching the A/D converter from exceeding a

maximum allowable input amplitude comprises determining that a wide-band signal power [

power level determined by controller 116, col. 5, lines 1-8] greater than a predetermined first

threshold [ the $P_A$ threshold in col. 8, line 46 to col. 9, line 3; the acceptable threshold $P_A$ in

col. 7, lines 39-45, Fig. 4] and

responsive thereto, reducing the gain of at least one amplifier coupled to an input

terminal of the A/D converter [ to prevent the signal level clipping at the input of the ADC

acrossing each frequency bands, col. 7, lines 25-30].

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness
rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by the manner in which the invention was
> made.

3.   Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of

Abbey [US 6,151,354] and Van Bezooijen et al. [ US 7,233,631 B2 ].

For claim 3, Smith teaches the method in claim 1 above, but fails to teach the sigma-delta converter.

Abbey teaches the <u>sigma-delta A/D converter</u> that <u>includes a decimation and filtering</u> <u>processing chain</u> [ the sigma-delta A/D 106 in Fig. 5, the decimation filer 108, the low pass filter 110 & the average peak detection 121, all together, for the claimed sigma-delta A/d converter], &

Van Bezooijen et al. [ Van Bezooijen ] teaches the DC level offset detection at 15-1 is positioned in between DFI and filter 17-1, & having an amplitude detection 19 [ the sole Figure & its corresponding description ]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith's Adc 114 with Abbey's teaching above, together with the consideration of Van Bezooijen's location of the DC level offset detection 15-1, such that the Abbey's average peak detection 110 can be also moved to the position in between the decimation 108 & low pass filter 110, in order to measure the power level of a wide band signal.

For claim 4, Smith further teaches the detecting an in-band signal power greater than a predetermined second threshold [ the Po of the desired threshold, as the second threshold, col. 7, lines 39-45], and

responsive thereto, reducing the gain of at least one amplifier coupled to an input terminal of the ADC [ to limit the converted digital codes from ADC, col. 7, lines 50-65; reducing the gain in col. 7, lines 9-30; to avoid clipping at the input of ADC 114].

4.  Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Shi [US 2005/0079,842 A1].

**For claim** 5, Smith teaches the method of claim 1 above, but fails to teach the placing the first variable gain amplifier in a low gain state if a wide-band signal power is greater than a first threshold.

Shi teaches the method for placing the first variable gain amplifier [ LNA 210] in a low gain state [ reducing the gain in step 604] if a wide-band signal power is greater than a first threshold [ step 602, the wide band Rssi_A is greater than threshold_A], to avoid the intermodulation interference. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Smith with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

**For claim** 6, Smith teaches the method of claim 1 above, but fails to teach the wide-band signal power is less than a first threshold, together with the narrow band signal power is greater than a second threshold.

Shi teaches the wherein the radio receiver [200] includes a first variable gain amplifier [LNA 210], and the method further comprises

determining that a wide-band signal power is less than a first threshold [ step 602, wide power Rssi_A is less than thres_A, then, go to step 608]; and placing the first variable gain amplifier in a low gain state if a narrow-band signal power is greater than a second threshold [ reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614], such that the first variable gain amplifier could be reduced based on the detected narrow band power level, as rationale to combine Shi to Smith.

5.    Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Shi, as applied to claim 6 above, and further in view of Walker et al. [US 2005/0208,919 A1].

**For claim** 7, Smith teaches the method of claim 1 above, but fails to teach the low gain state.

Shi teaches the wherein the first variable gain amplifier is placed in a low gain state if the narrow-band power is greater than the second threshold [ the narrow Rssi_B is greater than thres_C at step 612, then, to reduce the gain of LNA, step 616], using the same rationale in claim 3 above to combine Shi to Smith.

Smith, Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [ the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Smith, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

**For claim** 8, Smith teaches the method of claim 1 above, but fails to teach the high gain state if the narrow-band power is less than the second threshold.

Shi teaches the wherein the first variable gain amplifier [LNA] is placed in a high gain state [step 706] if the narrow-band power is less than the second threshold [ the narrow Rssi_B is less than thres_C at step 612, then, to step 702, to increase the gain of LNA at step 706].

Smith, Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [ the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], using the same reasoning in claim 8 above to combine Walder to Smith & Shi.

**For claim** 9, Smith teaches the method of claim 1 above, but fails to teach the same hysteresis value.

Walker teaches the wherein the first hysteresis value and the second hysteresis value are the same [ the same hysteresis value, from L1-Fall going towards L1-Rise or from L1-Rise going towards L1-Fall, in Fig. 4C for raising the gain or reducing the gain ], using the same rationale in claim 8 above to combine Walder to Smith & Shi.

6.  Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz et al. [ US 7,046,749 B2] in view of Hughes-'676 A1 and Shi-'842 A1.

**For claim** 10, Takatz et al. [ Takatz] teaches a method of preventing saturation of a sigma-delta A/D converter in a radio receiver [ Fig. 1, Fig. 5A-5C & the description in specification, claims 1, 6-7; the AGC loop coupled to VGA 12 for limiting the signal clipping by ADC 14, col. 3, line 65 to col. 4, line 8 & col. 4, lines 41-48],

having digital channel selectivity circuitry [ digital filter 17-I, 17-Q, Fig. 1].

Takatz fails to teach the wide band power estimation.

Hughes teaches the wide band power estimation [ the wide band power measure 106 obtains the total wide power at the input of A/D, Fig. 1, paragraph 0008-0009; step 302 in paragraph 0015], in order to control the front end gain based on the detected wide band power level. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Hughes' wideband power estimation, such that the front end gain could be controlled according to the detected wide band power level.

Takatz & Hughes fail to teach the obtaining a wide-band power estimation and a narrow-band power estimation; the reducing an amplifier gain of a first one of a plurality of amplifiers

if the wide-band power estimation is greater than a first predetermined value; if the wide-band power estimation is not greater than the first predetermined value, reducing the gain of at least one of the plurality of amplifiers if the narrow-band power estimation is greater than a second predetermined value.

Shi teaches the comprising obtaining a wide-band power estimation [ 218, paragraph 0043] and a narrow-band power estimation [ 220, oo43]; reducing an amplifier gain [ step 604] of a first one of a plurality of amplifiers [ first amplifier LNA 210] if the wide-band power estimation [ wide power Rssi_A ] is greater than a first predetermined value [ if wide power Rssi_A is greater than thres_A at step 602]; and

the wide-band signal power estimation [218, paragraph 0043] is not greater than a first predetermined value [ step 602, wide power Rssi_A is less than thres_A, then, go to step 608], reducing the gain of at least one of the plurality of amplifiers

if a narrow-band power is greater than a second predetermined value [ reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614], to avoid the intermodulation interference [paragraph 0044]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Hughes with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Hughes, Shi, as applied to claim 10 above, and further in view of Abbey-'354 and Van Bezooijen-'631 B2].

**For claim** 11, Takatz teaches the method [Fig, 1, Fig. 5A-5C, its description & claims 1, 6-7], wherein the first predetermined value is selected [ the in this instance, selecting a -3

dBm threshold,  col. 4, lines 55-63] so as to reduce the occurrence of ADC saturation due to

out-of-band signal power [ to limit the signal clipping at ADC 14, col. 3, line 65 to col. 4, line

8].

Takatz in view of Hughes, Shi, fail to teach the wideband power estimation from an

intermediate point between the decimation &filter chain, associated with the sigma-delta

converter.

Abbey teaches the sigma-delta A/D converter that includes a decimation and filtering

processing chain [ the sigma-delta A/D 106 in Fig. 5, the decimation filer 108, the low pass

filter 110 & the average peak detection 121, all together, for the claimed sigma-delta A/d

converter], &

Van Bezooijen et al. [ Van Bezooijen ] teaches the DC level offset detection at 15-1 is

positioned in between DFI and filter 17-1, & having an amplitude detection 19 [ the sole

Figure & its corresponding description ]. Therefore, It would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Smith's Adc 114, in view

of Shi, with  Abbey's teaching above, together with the consideration of Van Bezooijen's

location of the DC level offset detection 15-1, such that the Abbey's average peak detection

110 can be also moved to the position in between the decimation 108 & low pass filter 110,

in order to measure the power level of a wide band signal.


8.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz [US

7,046,749 B2] in view of Shi-'842 A1 and Walker-'919 A1.

**For claim** 12, Takatz teaches a method of operating a radio receiver [Fig. 1, Fig. 5A-5C

& its description in specification, claims 1, 6-7] having a plurality of serially coupled variable

gain amplifiers [VGA1 to VGA3, Fig. 5A], and a digital portion [ 15] that performs, at least

partially, a frequency selectivity function [ digital filter 17-I, 17-Q, Fig. 1, 160-I/160q in Fig, 5B

& its description in specification], but fails to teach the steps a) to g).

Shi teaches a radio receiver an analog down-conversion portion, to provide digital signal

via sigma-delta ADC 217[ Fig. 2, analog mixer 212], including the method comprising

a) setting each of the plurality of the variable gain amplifiers to a high gain state [ setting

the LNA to maximum gain in paragraph 0015, for the plurality of amplifiers in 12 of Takatz ] ;

b) obtaining a wide-band signal power estimate; c) obtaining a narrow-band signal power

estimate [ estimating wide, narrow, band power at 218, 222, paragraph 0043];

d) determining if the wide-band signal power estimate is greater than the value of a

wide-band threshold, e) setting a first one of the plurality of variable gain amplifiers to a low

gain state if the determination in (d) is affirmative [reducing the gain in step 604, if the wide

band Rssi_A is greater than threshold_A at step 602, Fig. 6],

f) if the determination in (d) is negative [ N from step 602], determining if the narrow-

band signal power estimate is greater than the value of a narrow-band threshold [ narrow

band power Rssi_B is compared with threshold thres_C at 612]; and

g) setting the first one of the plurality of variable gain amplifiers to a low gain state if the

narrow-band signal power estimate is greater than the first narrow-band threshold value

[ reducing the gain of LNA at step 616 if narrow power Rssi_B is greater than thres_C at

step 612], to avoid the intermodulation interference [paragraph 0044], the reducing the

clipping & out of band signal [col. 1, lines 36-58], the clipping generates the distortion with

the out of band harmonics, which causes Takatz to suffer the interfering harmonics from the

clipping effect.

Takatz & Shi are both are teachings of the automatic gain control for a receiver, to limit

the ADC clipping via AGC loop. They are both in the same field of teachings. Therefore, It

would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Shi's detecting of wide band signal power level with the threshold, such that the receiver reception could be better by avoiding the intermodulation interference.

Takatz, Shi fail to teach the hysteresis.

Walker teaches the hysteresis value for the threshold [ the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

9. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Shi, Walker, as applied to claim 12 above, and further in view of Husted et al. [US 2003/0012,313 A1].

**For claim** 13, Takatz teaches the method as shown in claim 12 above. Shi teaches the wide band threshold, thres_A at step 602. Takatz, Shi, Walker fail to teach the further comprising dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [ the saturation threshold can be down loaded in paragraph 0041], in order to  adjust the threshold values. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable threshold, in order to avoid the saturation of the ADC.

**For claim** 14, Takatz teaches the method together with Shi, Walker in claim 13,

although Shi teaches the narrow band threshold, thres_C at step 612, but fails to teaches

the dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [ the

saturation threshold can be down loaded in paragraph 0041], in order to adjust the threshold

values. Therefore, It would have been obvious to one of ordinary skill in the art at the time

the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable

threshold, in order to avoid the saturation of the ADC.

10. Claims 15-17, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in

view of Takatz.

**For claim** 15, Shi teaches  a radio receiver [Fig. 2] comprising an analog down

converter [ A/D in 212] including a plurality of serially coupled variable gain amplifiers [210,

216], an analog-to-digital converter [ 217 ] connected to one of the plurality of variable

amplifiers [216, 210], the AGC circuitry configured to received wide band signal power

estimation [ Rssi_A receives, detects, wide band power, & send to agc 222, Fig. 2 & its

corresponding description] obtained by measuring a signal [ input to Rssi_A 218] between

the ADC converter [217]  and the selectivity circuitry [ Saw 208] and a narrow power

estimate [ 220, abstract].

Shi fails to teach a digital base band processor connected to the ADC converter; the

digital baseband processor including selectivity circuitry.

Takatz teaches a digital base band processor [15, 24, 21-23, Fig. 1] connected to the

ADC converter [ ADC 24] including selectivity circuitry [ digital  filters 17-I, 17-Q], in order to

demodulate the converted digital samples. Therefore, It would have been obvious to one of

ordinary skill in the art at the time the invention was made to upgrade Shi with Takatz's

digital base band processing, in order to demodulate the digital samples.

**For claim** 16, Shi fails to teach the plurality of variable gain amplifiers VGA are coupled

to the automatic gain control circuitry. Takatz teaches the wherein the plurality of variable

gain amplifiers VGA are coupled to the automatic gain control circuitry [ VGA1 to VGA 3,

Fig. 5A, coupled to the AGC loop via D/A 214], such that the gain of the VGAs could be

automatically controlled via the AGC, as the rationale to combine Takatz to Hughes & Shi.

**For claim** 17, Shi teaches the sigma-delta analog-to-digital converter [ $\Sigma$-$\Delta$ ADC 217,

Fig. 2].

**For claim** 20, Shi fails to teach the digital filter. Takatz teaches wherein the selectivity

circuitry comprises digital filters [ digital filter 17-I, 17Q], using the same rationale in claim 15

to combine Takatz to Hughes & Shi.


11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in view of

Takatz, as applied to claim 15 above, and further in view of Ciccarelli et al. [ US 6,498,926

B1].

**For claim** 18, Shi teaches the wherein the automatic gain control circuitry 222 for

comparing wide band threshold, thrs_A at step 602 & narrow band threshold, thrs_C at step

612, but fails to teach the configured to receive threshold value.

Shi, Takatz fail to teach the AGC circuitry is further configured to receive a wide band &

narrow band threshold value.

Ciccarelli et al. [Ciccarelli] teaches the adjusting the rssi threshold based on the BER,

FER performance [col. 12, lines 39-54], in order to maintaining the signal quality. Therefore,

It would have been obvious to one of ordinary skill in the art at the time the invention was

made to upgrade Hughes, Shi, Takatz with Ciccarelli's adjustable rssi threshold, in order to

maintaining the signal quality.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in view of

Takatz, Ciccarelli, as applied to claim 18 above, and further in view of Hughes [US

2003/0207,674 A1].

   **For claim** 19, Shi teaches the radio receiver [Fig. 2, Fig. 5A-5C], Shi & Ciccarelli fail to

teach the wherein the automatic gain control circuitry is further configured to receive at least

one hysteresis value.

   Hughes teaches the wherein the automatic gain control circuitry [ AGC 170 & associated

circuitry in Fig. 1] is further configured to receive at least one hysteresis value [ the hyteresis

can be adjusted to +/-6 dB in paragraph 0040], to compensate the threshold changes for the

AGC. Therefore, It would have been obvious to one of ordinary skill in the art at the time the

invention was made to upgrade Takatz, Shi & Ciccarelli with Hughes' adjustable hysteresis,

in order to compensate the threshold changes for the AGC.

## Response to Argument

13. Applicant's arguments with respect to claims 1-20 have been considered but are moot in

view of the new ground(s) of rejection.

   Regarding applicant's amendment for the no teaching for the <u>obtaining a wideband

signal power estimate of total signal power reaching the A/D converter by measuring a

signal between the A/D converter and the digital signal processing portion; and responsive

to the wideband signal power estimate, preventing the total signal power reaching the A/D

converter from exceeding a maximum allowable input;  the sigma-delta A/D conveter tha

includes a decimation and filtering processing chain and the wideband signal power is</u>

<u>obtained by taking a signal fro an intermediate point in the decimation and filtering</u>

<u>processing chain;</u>  the lack of motivation to combine Takatz to Shie, due to failing to

establish that Takatz is suffering from the intermodulation interference [ page 7 of

applicant's last amendment],

**Smith et al. [ US 6,512,472 B1 ]** teaches the <u>obtaining a wideband signal power</u>

<u>estimate of total signal power reaching the A/D converter by measuring a signal between the</u>

<u>A/D converter and the digital signal processing portion</u> [ the controller 116 measures signal

power level of the samples from ADC 114, for the plural, wide, frequency bands, by

adjusting the cutoff frequency of the filters 106/108 & controlling the gain of amplifier 112 in

front of the ADC 114, to the desired level, to avoid the signal level clipping, col. 4, line 31 to

col. 5, line 8 & abstract]; and

   <u>responsive to the wideband signal power estimate, preventing the total signal power</u>

<u>reaching the A/D converter from exceeding a maximum allowable input</u>  [ controller 116

selects cutoff frequency of the filter 106/108, gain of 112, to avoid signal level clipping, col.

4, line 59 to col. 5, line 8 & abstract ].

**Abbey [US 6,151,354]**  teaches the <u>sigma-delta A/D converter</u> that <u>includes a</u>

<u>decimation and filtering processing chain</u> [ the sigma-delta A/D 106 in Fig. 5, the decimation

filer 108, the low pass filter 110 & the average peak detection 121, all together, for the

claimed sigma-delta A/d converter], &

**Van Bezooijen et al. [ US 7,233,631 B2 ]** teaches the DC level offset detection at 15-1

is positioned in between DFI and filter 17-1, & having an amplitude detection 19 [ the sole

Figure & its corresponding description ]. Therefore, It would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Abbey with the

consideration o f Van Bezooijen's position of the DC level offset detection 15-1, such that

the Abbey's average peak detection 110 can be also moved to the position in between the

decimation 108 & low pass filter 110, in order to measure the power level of a wide band

signal.

     Regarding to <u>the lack of motivation to combine Takatz to Shie, due to failing to establish</u>

<u>that Takatz is suffering from the intermodulation interference</u>,

     Takatz teaches the reducing the clipping & out of band signal [col. 1, lines 36-58], the

clipping generates the distortion with the out of band harmonics, which causes Takatz to

suffer the interfering harmonics from the clipping effect.

     Takatz & Shi are both are teachings of the automatic gain control for a receiver, to limit

the ADC clipping via AGC loop. They are both in the same field of teachings. Therefore, It

would have been obvious to one of ordinary skill in the art at the time the invention was

made to upgrade Takatz with Shi's detecting of wide band signal power level with the

threshold, such that the receiver reception could be better by avoiding the intermodulation

interference.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office

    action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is

    reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened

    statutory period for reply to this final action is set to expire THREE MONTHS from the

    mailing date of this action. In the event a first reply is filed within TWO MONTHS of the

    mailing date of this final action and the advisory action is not mailed until after the end of the

    THREE-MONTH shortened statutory period, then the shortened statutory period will expire

    on the date the advisory action is mailed, and any extension fee pursuant to 37

    CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of
this final action.

## Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner
should be directed to Charles Chow whose telephone number is (571) 272-7889.  The
examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Edward Urban can be reached on (571) 272-7899.  The fax phone number for
the organization where this application or proceeding is assigned is (571) 273-8300.
Information regarding the status of an application may be obtained from the Patent
Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PAIR
or Public PAIR.  Status information for unpublished applications is available through Private
PAIR only.  For more information about the PAIR system, see http://pair-direct.uspto.gov.
Should you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

Charles  Chow  /C. C./
Examiner, Art Unit 2618
March 17, 2008.

/Edward  Urban/

Supervisory Patent Examiner, Art Unit 2618